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only one in the modern technical literature of machine design, of this character, so far as we know, which includes the now well-known facts relating to the modification of the laws of solid friction by the introduction of the lubricant. The experiments of Hirn, who first discovered this modification, are alluded to, and those of Tower are given considerable attention; but, curiously enough, those of Thurston and of Woodbury in this country, which have been vastly more extensive, and which relate much more closely to the conditions of familiar ordinary practice, are not even mentioned, though they are now the basis of all rational work in the proportioning of journals, under other conditions than those of the Morin experiments, or of the comparatively rare "oil-bath" lubrication.

Elementary Dynamics of Particles and Solids. By W. M. HICKS. London and New York, Macmillan. 12°. \$1.60.

THIS closely printed text-book, in the neat standard style of the Macmillans' publications of the class, is a well-written treatise on the elements of mechanics for schools and colleges. It is substantially of the same grade, and of similar extent, with those familiar to teachers as usually adopted in the English institutions of learning. In such a case there is little opportunity for originality, and the subject admits of but little safe or profitable variation from the almost universal and standard methods of treatment. As stated by its author, the chief points of novelty are the consideration of the division of statics as a special case of kinetics, and the methods of discussion of the ideas of mass and of momentum, which are considered before taking up the ideas of force and resistance. This the author thinks the best, if not the only logical, order of procedure; and especially so, as the whole must be subject to confirmation and proof experimentally. He would establish his work on this basis, rather than upon the usual system of assumption, from experience, of general laws, and a logical construction of the science by building upon those laws. The work is well done, and, for those who prefer this method of treatment, it will be found an excellent text-book. The order of treatment is, (1) rectilinear motion of a particle, (2) forces in one plane, (3) motion of rigid bodies. An unusually rich collection of problems and examples is given.

The second part includes the study of machines and the modification of their efficiency by friction; the book being intended, as the author says, to meet the wants of mechanical engineers, as well as the classes of schools and colleges. It will hardly meet the needs of that class, however, as it is far too elementary and incomplete, as a system of applied mechanics, for their purposes. The treatment of the machines is the ancient one of studying the "six" (?) elementary machines, considering the inclined plane and the screw as different in principle, and the lever and the wheel and axle as different elementary machines. They are well treated. In the chapter on friction we have an example of the curious persistence of ancient and obsolete notions among the writers of text-books, who seem rarely to keep themselves abreast of the progress of research. The old notions of Coulomb are here made the basis of the study of friction losses of energy; and the author of the book seems entirely unaware that they have been obsolete, as respects lubricated surfaces, since the days of Hirn's investigations a generation ago. The young engineers of to-day might give such writers useful hints. The table of co-efficients of friction (six constants) is from the now almost forgotten work of Morin. They are, of course, correct for the conditions under which they were obtained, but not for other and the various usual conditions of machine operation; and no clue is given to the limitations of their application. The distinctions between friction of solids, friction of fluids, and "mediate" friction, are not alluded to.

Gems and Precious Stones of North America. By GEORGE F. KUNZ. New York, The Scientific Publishing Company. 4°. \$10.

THE author of this book is connected with the world-renowned firm of Tiffany & Co., and in his employment by this house as a gem expert has had a rare opportunity to become acquainted with the matters of which he treats in the book before us. Further, this expert knowledge has led to the employment of Mr. Kunz by

the United States Geological Survey on special investigations, which have made him the more conversant with his subject.

It may be asked, Are any gems found in North America? This question evidently presented itself to our author, as he opens his somewhat large treatise with the statement that gems are found here in great variety, but that there has been little systematic exploration for them, as the indications are not such as to justify the employment of large capital in the search. In fact, a week's yield of the granite-quarries exceeds in value the yearly output of gems the country over; and a day's yield of the South African diamond-mines is of more value than the year's yield of all gems in North America.

It is not to be supposed, however, that there is no search going on in this country for gems, or that cases are unknown in which persons for a while believe themselves the possessors of stones of great value found in their corn-field or sheep-pasture. Reports of such finds are constantly coming in, and many of them reach the jewelry house of Tiffany & Co. The stories of these deceptive stones, as told by Mr. Kunz, are interesting, and show that a book of the kind he has now brought out, if available in the libraries of the country, might quickly explain to the possessor of a green stone the differences between colored quartz and emerald.

Nine chapters are devoted to the gems of North America, in which descriptions are given of the gems, and chemical analyses to show their composition. A chapter follows on pearls, in which due attention is paid to the method of their formation. There are then two chapters on the precious stones of Canada and of Mexico and Central America. The book closes with two chapters devoted to aboriginal lapidary work in North America, and to the commercial value and uses of gems.

Aside from the gems found in this country, there is, as wealth accumulates here, a constant increase in the number of interesting gems held here by collectors, and of these Mr. Kunz has something to say.

The undoubted standing of Mr. Kunz as an authority on gems makes this work a real accession to the number of books to which one may turn for information; and, though the annual commercial output of gems is small in North America, we feel sure, especially as so many cognate subjects are treated within the book's covers, that there will be many—collectors and artisans—who will find it a help.

The execution of the book is to be praised in most respects,—the beauty of the colored plates, which are numerous and add much to its usefulness, is especially noticeable, and the general typographical appearance is excellent,—but there was evidently something wrong with the proof-reading, which left a long list of errors to be corrected in the unsatisfactory way of a list of errata.

AMONG THE PUBLISHERS.

THOSE who are interested in the uses, tests for purity, and preparation of chemical re-agents employed in chemical, microscopic, or petrographic analysis will find much valuable information in "Chemical Re-agents," by Charles O. Curtman, M.D., recently published by the John L. Boland Book and Stationery Company, St. Louis.

—Messrs. Longmans, Green, & Co. have issued a "Junior School Algebra." The author is William S. Beard, assistant master in Christ's Hospital. The book is intended for use in preparatory schools.

—"School Hygiene," by W. J. Abel, recently issued by Longmans, Green, & Co., contains simple directions respecting ventilation, eyesight, infectious diseases, and first aid in injuries. There is no attempt to explain the why and wherefore of the courses of procedure recommended. The manual is intended, as its title suggests, for use in schools, and it aims to describe what to do and how to do it, in case of diseases, accidents, etc.

—The leading articles in *Babyhood* for July are, "Fruit for Children," by J. W. Byers, M.D.; "Weaning," by D. Warman, M.D.; "The Kindergarten on the Farm" (continued series), by Adele Oberndorf; and "The Baby's Mind," by Elizabeth S. Brown,

M.D. The medical editor announces that hereafter more space will be given to questions of diet, in the department of "Nursery Problems," this subject seeming to be of never-ending interest and importance to the magazine's readers:

—The United States Department of Agriculture has issued Parts I., II., and III. of a "Bibliography of the More Important Contributions to American Economic Entomology." As far as published, this bibliography consists of an octavo volume of 454 pages, devoted to the writings of Benjamin Dann Walsh and Charles Valentine Riley. The importance of these writings can be appreciated when one considers that this index to them must have cost the government several thousand dollars. Samuel Henshaw is the editor of the work.

—A copy of the seventh edition of Bloxam's "Chemistry, Inorganic and Organic," was recently received. Among the new matter introduced is an account of Raoult's method for the determination of molecular formulæ, and Fischer and Tafel's investigations on the synthesis of sugars. The chemistry of vegetation has also been rewritten to suit more modern views. The portions relating to explosives, to which the book to some extent owes its reputation, have been duly revised. The publishers in this country are P. Blakiston, Son, & Co., Philadelphia.

—In the "Proceedings of the Royal Geographical Society for March, 1889," was published a paper on "The Selkirk Mountains," by W. S. Green. This paper was accompanied by a map giving the results of Mr. Green's surveys in this little-known region. As the space available in the "Proceedings" was naturally limited, it seemed desirable that a more extended report of the trip should be published; and this we have in "Among the Selkirk Glaciers," a recent publication of Macmillan. The author first had his attention drawn to the Selkirks by the reports of two friends who attended the meeting of the British Association in Montreal in 1884, and later took part in the excursion west on the then uncompleted Canadian Pacific Railway. It was not till the summer of 1888, however, that Mr. Green, accompanied by a friend well tried as a travelling companion, made his expedition. One

might suppose that a country reached by railway would offer little to explorers; but the difficulties presented by the Selkirks have debarred many travellers from venturing among them, so that we have in this book a valuable contribution to knowledge, as well as a well-written book of travel.

— "The Advancement of Science," by E. Ray Lankester, recently published by Macmillan, is a collection of essays printed in the various English reviews during the last ten or twelve years. The object of some of them was to help on government aid to science, and in general they were written with the purpose of informing the public of scientific progress. Naturally some statements of fact and theory are now a little out of date, but as a record of progress they have their value. The various titles are "Degeneration: a Chapter in Darwinism;" "Biology and the State;" "Pasteur and Hydrophobia;" "Examinations;" "The Scientific Results of the International Fisheries Exhibition, London, 1883;" "Centenarianism;" "Parthenogenesis;" "A Theory of Heredity;" and "The History and Scope of Zoölogy."

—Among the contributions in the forthcoming numbers of the English reviews for July, issued in this country in the original English form by the Leonard Scott Publication Company, New York, will be a paper recounting the particulars of a journey to Lhasa, the capital of Thibet, made by the Indian Buddhist scholar Sarat Chandra Das. This narrative, which deals with an almost unknown part of the world, has long been suppressed, in view of the information it gives to possible British rivals in Asia. Mr. Edward Bellamy will also have a paper in this number. The *Fortnightly Review* will contain, in addition to the usual variety of articles, one by Madame James Darmesteter, on "The Bookmen of Paris in the Fourteenth Century."

—The *Magazine of American History* opens its twenty-fourth volume with the July number. A portrait of Sir William Blackstone serves as frontispiece. Its pertinence is apparent to whosoever reads the leading article, "The Golden Age of Colonial New York." Mrs. Lamb has given a picture of the little metropolis of the province under kingly rule in 1768, conducting the curious

Publications received at Editor's Office,
June 16-28.

- BAZÁN, E. P. Russia: Its People and Its Literature. Tr. by Fanny Hale Gardiner. Chicago, A. C. McClurg & Co. 298 p. 16°. \$1.25.
- BELL, A. G. Memoir upon the Formation of a Deaf Variety of the Human Race. Washington, National Academy of Sciences. 86 p. 4°. \$1.25.
- CAMPBELL, D. H. Elements of Structural and Systematic Botany. Boston, Ginn & Co. 253 p. 12°. \$1.25.
- DEAF, Facts and Opinions relating to the. From America. London, Spottiswoode & Co. 1888. 195 p. 8°.
- DODEL, A. Instruction in Drawing in Primary and Intermediate Schools in Europe and America. With an Introduction by Louis Prang. Boston, New York, and Chicago, Prang Educ. Co. 35 p. 16°.
- FONTAINE, W. M. The Potomac or Younger Mesozoic Flora. Parts I. and II. Washington, Government. 377 p. 180 pl. 4°.
- FRASER, A. C. Locke. Philadelphia, Lippincott. 269 p. 16°. \$1.25.
- MINERALS, Catalogue of, for sale by Geo. L. English & Co. New York and Philadelphia. 100 p. 8°.
- NEWBERRY, J. S. The Paleozoic Fishes of North America. Washington, Government. 340 p. 4°.
- NEW YORK State Board of Charities, Annual Report of the, for the Year 1889. Albany, State. 411 p. 8°.
- NOLL, A. H. A Short History of Mexico. Chicago, A. C. McClurg & Co. 294 p. 16°. \$1.
- U. S. GEOLOGICAL SURVEY, Eighth Annual Report of the, to the Secretary of the Interior, 1886-87. Parts I. and II. Washington, Government. 1063 p. 4°.
- WENTWORTH, G. A. A School Algebra. Boston, Ginn & Co. 362 p. 12°. \$1.25.
- WHEELBARROW. Articles and Discussions on the Labor Question. Chicago, Open Court Publ. Co. 308 p. 12°. \$1.

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through its streets, houses, public buildings, and churches, to the commencement exercises of its college, to the founding of its Chamber of Commerce, to the king's legislative halls in Wall Street (with the governor, Sir Henry Moore, presiding), to the chamber of the City Corporation, and to the court-rooms, with descriptions of the men who figured in those places; while the newspapers, social affairs, amusements, shows, and quaint dress of the people are all depicted. Following this, Roy Singleton writes briefly of "Sir William Blackstone and his Work," the first volumes of which were already possessed by the principal lawyers of New York. "The Indian College at Cambridge," by Andrew McFarlane Davis, follows, with information on a subject little known; "Burgoyne's Defeat and Surrender, an Inquiry from an English Standpoint," by Percy Cross Standish, is interesting; "A Curious and Important Discovery in Indiana," by Ex-Lieut.-Gov. Robertson, gives a view of the links connecting the days of chivalry in France with those of adventure among the savage tribes of America; and then comes "President Lincoln's Humor," by David R. Locke. One of the most important papers in the number, however, is by the Boston divine, Rev. Samuel E. Herrick, D.D., entitled "Our Relation to the Past a Debt to the Future," which, although addressed to the people of Southampton, Long Island, may be taken home and appropriated by every community in the land.

—The number of the *American Journal of Psychology* just published (vol. iii, No. 2) contains the first chapter of the "History of Reflex Action," by Dr. C. F. Hodge, the introduction to which by Dr. G. Stanley Hall appeared in the last number. This important branch of both physiology and psychology is without an adequate historical treatment in English; and Eckhard's German treatise, published nine years ago, presents the subject almost exclusively from the standpoint of the physiologist. This chap-

ter brings the record down from Descartes into the present century, summarizing the contributions of Willis, Astruc of Montpellier, Whytt, Haller, Unzer, Prochaska, and Legallois. The history will be continued in succeeding numbers of the journal. Mr. E. A. Kirkpatrick contributes a paper of "Observations on College Seniors and Electives in Psychological Subjects," based upon statistics collected for Dr. Hall a few years ago by the professors of philosophy in several Eastern and two Western colleges. Questions were asked on the following heads: reason for electing such subjects, advantage already gained from such studies, authors found most impressive, most interesting subject treated in the course. While not admitting exact statistical treatment, the answers "form a composite portrait of the positions held, and the educational value of these studies from the student standpoint, of significance for teachers of these subjects. They have not only educational but anthropological significance, and reflect many sides and phases of mental evolution or psychogenesis which an ordinary examination-paper does not touch." Dr. E. C. Sanford describes "A Simple and Inexpensive Chronoscope," depending on the principle of the vernier, adapted from Kaiser. With the home-made instrument described, measurements were made to a hundredth of a second. It is, however, in reviews of "Psychological Literature" and "Notes," to which more than a hundred pages of fine print are devoted, that this number excels. Besides the usual section on the "Nervous System" (by Dr. H. H. Donaldson), on "Experimental Psychology," and on "Psychiatry" (by Dr. William Noyes), Dr. Arthur MacDonald presents a second instalment of reviews on the psychology of criminals, and Professor Julius Nelson continues his biological-psychological study of the literature of heredity and sex. A number of pages are also given to reports from colleges East and West, where the "new psychology" is taught, showing the work of the past year and the prospects for the future.

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